

REMARKS

In the Office Action, claims 25-50 were rejected. By the present response, claims 25, 29 and 46 are amended. Upon entry of the amendments, claims 25-50 will be pending in the present patent application. Reconsideration and allowance of all pending claims are requested.

Rejections Under 35 U.S.C. §112

Claims 25-50 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement.

Independent claims 25, 29 and 46 have been amended by the present response to recite a method for performing at least one of detecting a presence, *determining a spatial distribution*, and quantifying an amount of at least a chemical species. The method includes allowing the chemical species to selectively interact with a reagent in a fluid medium inside a capillary. The interaction between a reagent and the chemical species produces a product having a detectable characteristic of the interaction (for example, an optical signal). The method further includes detecting the characteristic of the interaction, measuring a magnitude of the characteristic, and measuring a time of detection of the characteristic. Detection of the characteristic of the interaction indicates the presence of a chemical species. The magnitude of the characteristic is related to an amount of the chemical species. The time of detection of the characteristic is related to a *spatial distribution of the interaction within the capillary*.

As indicated in Figure 1 and paragraphs 15 and 22 of the application, the present technique provides a spatial distribution of the interaction in the capillary by measuring a time of detection of the characteristic of the interaction. The time of detection is relatable to a position of the interaction (and also the spatial distribution) in the capillary. For example, as indicated in Figure 1, a characteristic corresponding to interaction between chemical species C3 and the reagent is detected first, indicating that it is closest to the

detector. Similarly, as indicated in Figure 1, a characteristic corresponding to interaction between chemical species C1 and the reagent is detected last, indicating that it is furthest from the detector. By measuring the times of the detection of the characteristic an indication of the spatial distribution can be obtained. Consequently, amended claims 25, 29 and 46 and their dependent claims 26-28, 30-45, and 47-50 are believed to conform to 35 U.S.C. 112 and to be in condition for allowance for the reasons summarized above. Consideration and allowance of the new claims are requested.

Rejections Under 35 U.S.C. §103(a)

Claims 25-39, 46, and 48-50 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,434,084 (hereinafter "Burgess").

Independent claims 25, 29 and 46 have been amended by the present response to recite a method for performing at least one of detecting a presence, *determining a spatial distribution*, and quantifying an amount of at least a chemical species. Independent claims 25, 29 and 46 had been previously amended to recite that in the present technique a sufficient residence time is allowed for the fluid medium to reside in the capillary. The residence time is provided to allow sufficient time for a chemical species to permeate through the walls of the capillary and to selectively interact with the reagent. A spatial distribution of the interaction between the chemical species and the reagent in the capillary may be determined by measuring a time of detection of the characteristic of the interaction.

Burgess teaches a sensor that delivers the reagent to a sensor probe in a continuous flow method that directly and *continuously* renews the reagent. The flow method allows for continuous measurement of the presence of an analyte. Since the reagent continuously flows through the sensor, the sensor does not allow for determination of a location (or spatial distribution) of the interaction between the chemical species and the reagent within the capillary. The Applicants respectfully note

that Burgess only discloses a stop flow mode for the sensor to adjust the sensitivity and dynamic range of the sensor (column 9, lines 28-49). Burgess neither teaches nor discloses a sensor system to determine spatial distribution of the interaction between the chemical species and the reagent within the capillary by measuring the time at which a characteristic of the interaction is detected.

For the reasons summarized hereinabove, Applicants respectfully submit that Burgess does not render the amended claims 25, 29, 46 obvious. Consequently claims 25-39, 46 and 48-50 are believed to be in condition for allowance.

Claims 40-45 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,434,084 (hereinafter "Burgess") in combination with various references.

As noted herein above, Burgess only teaches a sensor that delivers reagent to a sensor probe in a continuous flow method that directly and *continuously* renews the reagent. Since the reagent continuously flows through the sensor, the sensor does not allow for determination of a location (or spatial distribution) of the interaction between the chemical species and the reagent within the capillary. The secondary references do not obviate this deficiency in Burgess. Accordingly, Burgess alone or in combination with other references does not teach a sensor system to determine spatial distribution of the interaction between the chemical species and the reagent within the capillary by measuring the time at which a characteristic of the interaction is detected.

Consequently, claims 40-45 are believed to be in condition for allowance for the reasons summarized above. Consideration and allowance of the claims are requested.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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